

union of tubercles *ii*a and *i* on the thorax. In other respects there is present only a normal primitive first stage, just as in *S. virginica*, except for the purely specific characters of less cornified smaller tubercles, etc.

Ctenucha virginica.

Tubercles well developed, setæ all single as in *C. auge*, but in addition subprimary *vi* is present on abdominal segments 1 to 8; no subprimaries on thorax.

This represents in the Euchromiid phylum the same stage reached by *H. cunea* in the Arctiid branch, but not quite fully as there is here no trace of the subprimaries on the thorax.

EXPLANATION OF PLATES VII AND VIII.

- | | | |
|---|-----------------------------------|---------|
| Fig. 1. <i>Spilosoma virginica</i> , stage I. | Fig. 5. <i>Halisidota caryæ</i> , | Fig. I. |
| " 2. <i>Spilosoma antigone</i> , " " " | 6. <i>Cosmosoma auge</i> , | " " |
| " 3. <i>Hyphantria cunea</i> , " " " | 7. <i>Ctenucha virginica</i> , | " " |
| " 4. <i>Halisidota maculata</i> , " " " | | |

PRELIMINARY HAND-BOOK OF THE COLEOPTERA OF NORTHEASTERN AMERICA.

BY ROLAND HAYWARD.

(Continued from Vol. V, p. 40.)

The present part of the "Hand-Book," relating to *Bembidium*, has been prepared at the request of the Editor of this JOURNAL, made some time ago, but the fulfilment of which has been unavoidably delayed. It is, in fact, an abridgment of a larger paper on the species occurring in America, north of Mexico, which the author had in preparation at the time when the request was made, and which has only recently been published (Trans. Amer. Ent. Soc., 1897, xxiv, pp. 32-143). To this the student is referred for more complete descriptions, as well as for bibliography and synonymy.

In order to economize space, the species have not been arranged in groups, as has been done in the paper above cited, but are all included in one table. It will be observed that in all but two of our species (*lævigatum* and *semistriatum*) the dorsal punctures of the elytra are confined either to the third interval or to the third stria. In those just cited, however, they are arranged in irregular rows on all the intervals,

with the setæ arising from them well marked. They are included in the category "third interval with dorsal punctures."

Bembidium Latr.

Antennæ slender, arising under a slight frontal margin, the two basal joints glabrous. Head with two supra-orbital setæ. Mandibles with a setigerous puncture in the scrobe. Palpi with the penultimate joint obconical, pubescent, the last joint small, subulate. Prothorax with a setigerous puncture each side and another in the hind angle. Elytra glabrous, striate, the margin interrupted posteriorly with an internal plica; sutural stria not recurved at apex. Mesosternal epimera wide. Middle coxal cavities entirely inclosed by the sterna. Anterior tibiæ deeply emarginate, the apical angle not obliquely truncate. Tarsi slender, the claws simple.

The males have the first two joints of the anterior tarsi dilated, the first slightly elongate, nearly quadrate, the second more or less triangular, with the inner angle slightly prolonged.

The species of this genus are very numerous. They are all below the average size, ranging from two to about nine millimeters. Most of them are riparial in their habits, though some are found in moss, amongst old leaves or under bark, while a few occur almost everywhere.

Synopsis of Species.

Eyes large or moderately large, convex.....	2
Eyes small, flattened.....	49
2. Elytra with the humeri subangulate, third interval with dorsal punctures....	3
Elytra with two dorsal punctures on the third stria.....	12
Elytra with the humeri rounded, third interval with dorsal punctures.....	28
3. Mentum with a short, bifid tooth; striæ of elytra more or less abbreviated behind.....	4
Mentum with a large, entire tooth; striæ of elytra entire.....	
4. Elytral intervals with rows of sparsely placed setigerous punctures.....	5
Robust, convex; green or bronzed, shining; prothorax subquadrate, slightly wider at base than apex; base of antennæ and legs testaceous, the femora sometimes darker. Length, .22-.29 inch; 5.5-7.25 mm.....	lævigatum.
Elytra with two dorsal punctures on the third interval.	
Robust, slightly convex; æneous or nigro-æneous; prothorax subquadrate, wider at base than apex; antennæ black, more or less rufous at base; legs black or dark piceous, often slightly æneous, the tibiæ and tarsi sometimes rufo-piceous. Length, .18-.28 inch; 4.5-7 mm.....	nitidum.
5. Elytra with two impressed quadrate foveæ on the third interval, each enclosing a dorsal puncture.....	6
Elytra without trace of foveæ; two dorsal punctures on the third interval....	9

6. Elytra with the fourth stria sinuate. 7
 Elytra with the fourth stria straight. 8
7. Slender, elongate, convex; thorax as long as wide, not wider at base than apex, hind angles subacute; elytra deeply striate, the striæ distinctly punctate; legs æneous, the femora at base and the tibiæ more or less testaceous. Length, .19-.22 inch; 4.75-5.5 mm. **inæquale**.
 Broader, less convex; thorax distinctly wider than long, slightly wider at base than apex; hind angles varying from subrectangular to subacute; elytra less deeply striate, the striæ more finely punctate; legs variable, usually nearly as in *inæquale*. Length, .19-.26 inch; 4.75-6.25 mm. **littorale**.
8. Broad, slightly depressed; thorax nearly twice as wide as long, not wider at base than apex, sides arcuate in front, deeply sinuate behind, basal foveæ distinctly bistriate, hind angles subacute, carinate; elytra finely striate, the striæ finely punctate; legs varying from æneo-piceous to æneo-testaceous. Length, .22-.28 inch; 5.5-7 mm. **carinula**.
 Robust; thorax about one-half wider than long, wider at base than apex, sides slightly arcuate in front, sinuate behind, basal foveæ feebly or obsolete bistriate, hind angles prominent, acute; elytra deeply striate, the striæ deeply punctate; legs dark æneous, the femora at base and the tibiæ more or less rufous. Length, .22-.30 inch; 5.5-7.5 mm. **punctatostriatum**.
9. Thorax wider at base than apex. 10
 Thorax not wider at base than apex. 11
10. Robust, bronzed, shining; thorax nearly twice as wide as long, sides arcuate in front, sinuate behind, hind angles acute, carinate; elytra moderately deeply striato-punctate; legs rufo-piceous, slightly æneous, the femora rufous at base. Length, .23-.25 inch; 5.75-6.25 mm. **robusticolle**.
11. Feebly convex; bronzed, varying to bluish-black, shining; thorax about one-half wider than long, sides moderately arcuate in front, sinuate behind; hind angles slightly prominent, subacute, very finely or obsolete carinate; elytra deeply striato-punctate; legs æneo-piceous, the femora at base and the tibiæ rufous. Length, .22-.26 inch; 5.5-6.5 mm. **coxendix**.
 More robust; bronzed, usually coppery, elytra with the discs obscurely testaceous; thorax rather less than one-half wider than long, sides arcuate nearly to base, feebly sinuate in front of the hind angles, which are subrectangular and feebly carinate; elytra moderately deeply striato-punctate, the punctures usually greenish; legs testaceous. Length, .18-.27 inch; 4.5-6.75 mm. **confusum**.
12. Eighth stria of the elytra moderately near, but distinct from the margin. . . . 13
 Eighth stria of the elytra indistinct from the margin; humeri rounded. 16
13. Humeri of elytra subangulate, all the striæ entire; hind angles of thorax not carinate; color more or less bronzed, sometimes greenish or bluish. 14
 Humeri of elytra rounded; hind angles of thorax carinate. 15
14. Elytra with the dorsal punctures large, round, foveiform.
 Thorax narrower at base than apex, sides moderately arcuate in front, slightly sinuate behind, hind angles subrectangular; elytra finely striate, very finely alutaceous, shining. Length, .20-.24 inch; 5-6 mm. **americanum**
 Elytra with the dorsal punctures normal.

- Broad, dilated, depressed; thorax narrower at base than apex, sides strongly arcuate in front, sinuate behind, hind angles obtuse; elytra moderately deeply striate, much more finely at tip; legs dark rufous. Length, .26-.29 inch; 6.5-7.25 mm. **dilatatum**.
- More elongate, feebly convex; thorax scarcely narrower at base than apex, sides slightly arcuate in front, feebly sinuate behind, hind angles subrectangular; elytra more deeply striate; legs piceous, the femora at base and the tibiæ often rufous. Length, .23-.27 inch; 5.75-6.75 mm. **honestum**.
- More convex; thorax more narrowed behind, apex truncate, sides strongly arcuate in front, sinuate behind, hind angles subrectangular; elytra more deeply striate, the striæ more deeply, almost crenulately punctate. Length, .22-.25 inch; 5.5-6.25 mm. **chalceum**.
- Elongate, depressed; thorax slightly narrower at base than apex, sides arcuate in front, sinuate behind, hind angles acute, slightly prominent; elytra moderately finely striate, the striæ distinctly punctate, with an ill-defined discal spot about one-third from apex testaceous; legs rufous. Length, .20-.23 inch; 5-6.75 mm. **blanchardi**.
15. Robust, very convex; nigro-æneous often tinged with green; thorax one-half wider than long, narrower at base than apex; elytra deeply striato-punctate, the striæ dilated, the first and second entire, the fifth represented by a groove at apex; base of antennæ and legs rufous. Length, .15-.18 inch; 3.75-4.5 mm. **nigrum**.
- Less convex, elongate; black, slightly æneous; thorax narrower at base than apex, apex truncate; elytra with the first, second, third and seventh striæ entire; legs dark piceous or black. Length, .15-.18 inch; 3.75-4.5 mm. **longulum**.
- More robust than *longulum*; nigro-æneous, the elytra sometimes tinged with brown; thorax scarcely narrower at base than apex, about one-half wider than long; elytra with all the striæ entire; legs piceous or rufo piceous. Length, .15-.20 inch; 3.75-5 mm. **concolor**.
16. Thorax trapezoidal, scarcely convex, the basal foveæ distinctly bistriate with the outer stria as long or longer than the inner, hind angles distinctly carinate; legs dark. 17
- Thorax trapezoidal, scarcely convex, the basal foveæ unistriate or feebly bistriate with the outer stria very small, hind angles at most very finely carinate; legs rufous or testaceous, the femora rarely darker. 18
- Thorax cordate, convex, narrower at base than apex; basal foveæ bistriate. 21
17. Form depressed; thorax slightly wider than long, as wide at base as apex; elytra finely striate, the striæ very finely or obsoletely punctulate; color piceous or nearly black, scarcely æneous; legs piceous. Length, .27-.35 inch; 6.75-8.75 mm. **planatum**.
- Smaller species; striæ of elytra impunctate.
- Elytra distinctly wider than the thorax; depressed, slender, elongate; nearly black, the elytra usually more or less brownish; thorax scarcely one-half wider than long, slightly narrower at base than apex, sides arcuate in front, oblique or obsoletely sinuate behind, hind angles obtuse, but not rounded; elytra moderately deeply striate; legs rufo-piceous. Length, .16-.19 inch; 4-4.75 mm. **simplex**.

- Very close to *simplex*, but less elongate; thorax scarcely narrower at base than apex, sides sinuate behind, hind angles rectangular; legs piceous or nearly black, rarely rufo-piceous. Length, .16-.20 inch; 4-5 mm. **planiusculum.**
- Elytra very slightly wider than the thorax, finely striate, the outer striæ very fine, especially towards the tip, dorsal punctures large; black, more or less bronzed, depressed; thorax nearly twice as wide as long, scarcely narrower at base than apex, sides arcuate to base, hind angles obtuse, but not rounded; legs black. Length, .17-.23 inch; 4.25-5.75 mm. **incertum.**
18. Basal impressions of thorax with the outer stria small, but distinct 19
 Basal impressions of thorax with the outer stria obsolete; larger species. 20
19. Thorax distinctly narrower at base than apex.
 Elongate, slender, very depressed; piceous or nearly black, the elytra more or less brownish; thorax with the sides distinctly sinuate behind, hind angles rectangular; head large, scarcely narrower than the thorax; elytra slightly wider than the thorax, subparallel, deeply striato-punctate, all the striæ entire; legs rufous. Length, .21-.25 inch; 4.25-5.25 mm. **grandiceps.**
- Thorax very slightly narrower at base than apex.
 Moderately elongate, depressed; head and thorax nigro-æneous, elytra dark brown or piceous, moderately deeply striato-punctate on the disc, less so at sides and tip, the five inner striæ entire, the sixth and seventh abbreviated behind, the latter often wanting; thorax about one-half wider than long, sides feebly sinuate behind, hind angles subrectangular; legs rufous. Length, .19-.22 inch; 4.75-5.5 mm. **guexi.**
- Slightly elongate, less depressed, nearly black, usually slightly æneous or bluish; elytra less wide as compared with the thorax, striate nearly as in *guexi*, the six inner striæ entire, the seventh abbreviated behind or wanting; thorax more than one half wider than long, sides obsoletely sinuate behind, hind angles slightly obtuse; legs rufous. Length, .22-.25 inch; 5.5-6.25 mm. **fugax.**
20. Head and thorax nigro-æneous, the latter with the hind angles rectangular or subobtuse; elytra testaceous with darker transverse bands or nigro-æneous transversely banded with testaceous, more or less deeply striato punctate, the six inner striæ entire, the seventh varying from entire to wanting; legs testaceous or nearly rufous, the femora rarely darker. Length, .24-.34 inch; 6-8.5 mm. **transversale.**
21. Elytra each with a well-defined basal and another subapical spot pale; legs rufo-testaceous 22
 Elytra either immaculate or with a pale submarginal spot near the apex 23
 Elytra very pale testaceous, narrowly rufous or rufo-piceous along the suture to behind the middle, where there is a large spot of the same color, often connected with the margin by a narrow transverse line; head and thorax nigro-æneous; elytra finely striato-punctate, the five inner striæ entire; legs testaceous, the femora sometimes darker. Length, .17-.20 inch 4.25-5 mm. **fuscicrum.**
22. Thorax distinctly narrower at base than apex, sides strongly arcuate in front, deeply sinuate behind, hind angles rectangular; elytra moderately deeply striato-punctate, intervals convex. Length, .21-.25 inch; 5.25-6.25 mm. **ustulatum.**

- Thorax slightly narrower at base than apex, sides moderately arcuate in front, sinuate behind, hind angles rectangular; elytra moderately finely striato-punctate, intervals nearly flat; form less convex and color more brownish than in *ustulatum*. Length, .18-.26 inch; 4.5-6.5 mm. **lucidum**.
23. Thorax wider than long. 24
 Thorax as long as wide; nigro-æneous, elytra often brownish at base with a submarginal pale spot about one-fourth from apex, which is rarely wanting, moderately finely striato-punctate, the first and second striæ entire, the fifth represented by a groove at apex; legs rufo-testaceous. Length, .16-.20 inch; .4-.5 mm. **scopulinum**.
24. Head as wide as the thorax at apex. 25
 Head small, narrower than the prothorax at apex; elytra with a submarginal pale spots near the apex, which is rarely wanting.
 Elongate, convex; elytra finely striato-punctate, the striæ not dilated, intervals feebly convex: antennæ piceous, the first joint rufous; legs rufous, the femora usually darker. Length, .24-.30 inch; 6-7.5 mm. **bimaculatum**.
 More convex; thorax more narrowed behind; elytra deeply striato-punctate, the striæ dilated on the disc, much finer at sides and tip; antennæ fuscous, the basal joints paler; legs pale yellowish tsetaceous. Length, .24-.28 inch; 6-7 mm. **postremum**.
25. Elytra with the first and second striæ entire, the fifth either entire or represented by a groove at tip, the others abbreviated behind. 26
 Elytra with all the striæ entire; dark viridi-æneous, the elytra without submarginal pale spot, moderately deeply striato-punctate, more finely at sides and tip; legs rufous. Length, .22-.24 inch; 5.5-6 mm. **canadense**.
26. Hind angles of thorax rectangular 27
 Hind angles of thorax obtuse, but not rounded; rather slender, elongate, color varying from brownish to black, slightly æneous; elytra without submarginal pale spot, rather deeply striato-punctate; thorax with the sides feebly sinuate in front of the hind angles; legs rufous. Length, .23-.28 inch; 5.75-7 mm. **texanum**.
27. Moderately robust; black, usually slightly æneous or bluish, the elytra rarely with a submarginal pale spot, rather deeply striato-punctate; sides of thorax distinctly sinuate behind; legs rufous. Length .20-.24 inch; 5-6 mm. **picipes**.
 Elongate, slightly convex; black, slightly æneous, elytra without submarginal pale spot, finely striate, striæ distinctly punctate; legs black or dark piceous. Length, .16-.18 inch; 4-4.5 mm. **grapii**.
28. Elytra with two dorsal punctures on the third interval. 29
 Elytra with rows of sparsely placed, setigerous punctures on all the intervals; all the striæ abbreviated behind; frontal striæ normal. 48
29. Frontal striæ normal; elytra distinctly striate, with at least the first and second striæ entire; striæ punctate. 30
 Frontal striæ double, oblique, the outer interrupted. 42
 Frontal striæ double, nearly parallel, the outer entire. 45
 Frontal striæ very oblique, strongly convergent, double, the outer often very feeble, abbreviated behind 46

30. Thorax narrower at base than apex 31
 Thorax not perceptibly narrower at base than apex 38
31. Form depressed; all the striæ of the elytra entire 32
 Form more or less convex 33
32. Head and thorax coarsely alutaceous, cupreo-æneous, elytra testaceous with a humeral spot, a small oblong spot on third interval, about one-third from base, and two transverse bands bronzed or nearly black, the first slightly behind the middle, the second about one-fourth from apex, the last three connected by a narrow sutural line; thorax cordate, nearly twice as wide as long; base of antennæ and legs testaceous. Length, .20-.24 inch; 5-6 mm. **cordatum**.
 Dark viridiæneous, elytra with the apex, a subapical spot, and rarely a short transverse band in front of the middle testaceous; head and thorax alutaceous, the latter subquadrate, slightly narrower at base than apex, sides at most obsoletely sinuate behind, hind angles obtuse; legs rufous or rufo-piceous. Length, .15-.18 inch; 3.75-4.5 mm. **intermedium**.
33. Elytra with all the striæ entire; thorax more or less cordate 34
 Elytra with several striæ abbreviated behind 35
34. Head and thorax nigro-æneous, the former finely alutaceous; elytra æneo-piceous with a subhumeral blotch, a transverse band behind the middle and sometimes the apex paler, the markings ill-defined; form elongate; legs testaceous. Length, .20-.23 inch; 5-5.75 mm. **graciliforme**.
 Head and thorax viridiæneous, alutaceous, elytra testaceous with a transverse band slightly behind the middle, another between this and the apex and sometimes a subbasal cloud fuscous, striæ scarcely less deep at tip; legs testaceous. Length, .16-.18 inch; 4-4.5 mm. **viridicolle**.
 Dark viridi-æneous, elytra usually with a narrow transverse band about one-third from base, another about one-third from apex and an apical spot testaceous, the three usually connected along the margin; head alutaceous; elytral striæ much finer at tip; legs testaceous. Length, .16-.18 inch; 4-4.5 mm.
- fraternum**.
- Much smaller, elongate; head and thorax black or slightly æneous, the former very finely alutaceous; elytra varying from testaceous with black markings to nearly black with paler markings; legs rufous. Length, .10-.13 inch; 2.5-3.25 mm. **timidum**.
35. Thorax with the hind angles distinctly carinate. 36
 Thorax with the hind angles very finely or not carinate; head distinctly alutaceous; larger species. 37
36. Head at most very finely alutaceous; form and color nearly as in *timidum*, but slightly more elongate and more convex, with the sides of the thorax usually more deeply sinuate behind; elytra with the first and second striæ entire, the fifth represented by a groove at tip; legs testaceous. Length, .10-.13 inch; 2.5-3.25 mm. **versicolor**.
 Head not alutaceous; robust; black, slightly æneous; sides of thorax arcuate in front, oblique behind, hind angles obtuse; elytra slightly wider than the thorax, with the first, second and fifth striæ entire; legs piceous. Length, .11-.13 inch; 2.75-3.25 mm. **morulum**.
37. Moderately convex, elongate; æneous or nigro-æneous, elytra with the apex, a sub-

- apical spot, often a short transverse band in front of the middle and a narrow line along the margin testaceous; thorax with the sides arcuate nearly to base, sinuate in front of the hind angles, which are subrectangular and finely, almost obsolete, carinate; legs rufo-testaceous. Length, .17-.22 inch; 4.25-5.5 mm. **constrictum**.
- Convex, slender, very elongate; color nearly as in *constrictum*, the apex and margin of the elytra more or less testaceous; thorax with the sides arcuate to base, hind angles obtuse, not carinate; legs rufo-testaceous. Length, .18-.24 inch; 4.5-6 mm. **contractum**.
38. Thorax squarely truncate at base; head alutaceous. 39
Thorax slightly obliquely truncate each side at base. 41
39. Hind angles of thorax rectangular. 40
Hind angles of thorax obtuse; feebly convex; head and thorax viridi-æneous elytra fuscous, with a humeral lunule, a transverse fascia behind the middle and the apex testaceous; thorax with the sides arcuate to base; elytra very slightly wider than the thorax; legs rufo-testaceous. Length, .16-.18 inch; 4-4.5 mm. **ænicolle**.
40. Nigro-æneous; elytra moderately deeply striate, marked nearly as in *gracilliforme*, the markings ill-defined; head and thorax rather finely alutaceous; legs varying from rufous to piceous. Length, .20-.24 inch; 5-6 mm.
- dentellum**.
- Brown bronze, elytra testaceous, marked somewhat as in *cordatum*, the markings ill-defined and broader; head and thorax very distinctly alutaceous; legs rufo-testaceous. Length, .17-.19 inch; 4.25-4.75 mm. **versutum**.
- Nigro-æneous, elytra either testaceous variegated with black, or black variegated with testaceous, the markings well defined.
- Legs testaceous. Length, .14-.19 inch; 3.5-4.75 mm. **variegatum**.
- Legs black or dark piceous. Length .13-.16 inch; 3.25-4 mm. **nigripes**.
41. Head not alutaceous; form and color nearly as in *postfasciatum*; elytra without postscutellar depression, more finely striate, the striæ not dilated at base, the markings narrower and paler; head and thorax bright viridi- or cupreo-æneous; legs testaceous. Length, .20-.23 inch; 5-5.75 mm. **dorsale**.
- Head alutaceous; broad, dilated; elytra more than one-half wider than the thorax, deeply striate, the striæ dilated at base, with a transverse depression behind the scutellum; head and thorax cupreo-æneous, elytra testaceous with a small spot on the third interval about one-third from base, a transverse band about the middle and another between this and the apex nearly black; legs testaceous. Length, .20-.24 inch; 5-6 mm. **postfasciatum**.
42. Thorax cordate, pedunculate or subpedunculate; form moderately elongate; hind angles of thorax not carinate; elytral striæ abbreviated behind. 43
Thorax cordate or subcordate, truncate at base. 44
43. Moderately convex, slender; black, slightly æneous, elytra with a subhumeral pale spot; thorax less than one-half wider than long; legs piceous or nearly black, the tibiæ and tarsi usually paler. Length, .12-.14 inch; 3-3.5 mm.
- mutatum**.
- Moderately convex; brownish æneous, elytra with a subhumeral spot and usually a small submarginal one behind the middle yellowish testaceous; thorax

- scarcely wider than long; legs yellowish testaceous. Length, .12-.14 inch; 3-3.5 mm. **pedicellatum.**
- Slightly depressed; color varying from brownish to nearly black, slightly æneous, elytra with a large, triangular subhumeral spot, and a smaller one, behind the middle, yellowish testaceous; thorax rather more than one half wider than long; legs yellowish testaceous. Length, .10-.14 inch; 2.5-3.5 mm.
- quadrinaculatum.**
44. Black, slightly æneous; thorax cordate, slightly wider than long, very distinctly narrower at base than apex, basal impressions unistriate; elytra more than one-half wider than the thorax, variegated with testaceous markings along the margin; legs testaceous. Length, .10-.14 inch; 2.5-3.5 mm. **affine.**
- Piceous or nearly black, the elytra often tinged with brown, unicolorous; thorax about one-half wider than long, subcordate, slightly narrower at base than apex, basal impressions bistriate; elytra slightly wider than the thorax; legs rufo-testaceous. Length, .10-.13 inch; 2.5-3.25 mm. **muscicola.**
45. Slightly elongate, moderately convex; black, often tinged with greenish, elytra with a subapical spot and the apex pale; thorax subquadrate, slightly narrower at base than apex, hind angles carinate; elytra moderately finely striate, the striæ abbreviated behind, the two inner nearly entire; legs rufo-testaceous. Length, .13-.14 inch; 3.25-3.5 mm. **sulcatum.**
46. Thorax distinctly wider than long; elytra about one-half wider than the thorax. 47 Thorax scarcely wider than long; hind angles rectangular; convex, nigro-æneous, the elytra often brownish, deeply striato-punctate, with a subapical spot and the apex pale testaceous, legs testaceous. Length, .08-.11 inch; 2-2.75 mm. **assimile.**
47. Hind angles of thorax acute; form slightly elongate, convex; color black, scarcely æneous, the elytra with a subapical spot and the apex more or less testaceous; basal impressions of thorax unistriate; elytra finely striato-punctate; legs piceous or rufo-piceous. Length, .13-.15 inch; 3.25-4 mm.
- anguliferum.**
- Hind angles of thorax rectangular; less elongate than *anguliferum*; color nearly as in that species, the elytral spots more marked; basal impressions of thorax bistriate; striæ of elytra deeper; legs rufous or pale rufo-piceous. Length, .12-.15 inch; 3-3.75 mm. **cautum.**
48. Slightly elongate, convex; black, scarcely æneous; thorax distinctly narrower at base than apex; striæ of elytra with deep, not closely placed punctures; legs yellowish testaceous. Length, .15-.17 inch; 3.75-4.25 mm. **semistriatum.**
49. Maxillæ with the outer lobe biarticulate; elytra with two dorsal punctures on the third striæ.
- Thorax about one-half wider than long, basal impressions moderately deep; elytra oblong-ovate, slightly wider than the thorax, deeply striate, the striæ entire; form elongate, depressed; color dark rufous, the elytra varying to slate-color; legs rufous. Length, .14-.16 inch; 3.5-4 mm.
- puritanum.**
- Maxillæ with the outer lobe with the two joints united; mandibles long, slender, nearly straight; elytra with two dorsal punctures on the third interval.
- Feebly convex; rufous or rufo-piceous; thorax slightly wider than long, dis-

tinely narrower at base than apex, hind angles rectangular; striae of elytra sparsely and very finely punctate; legs rufous. Length, .17-.22 inch; 4.25-5.5 mm.....**oblongulum.**

B. lævigatum Say.—Trans. Am. Phil. Soc. 1823, II, p. 84.

A large and easily recognized species. By the arrangement of the dorsal punctures it recalls *semistriatum*.

Habitat: New Hampshire to South Carolina and westward to Montana and Texas.

B. nitidum Kirby.—Faun. Bor. Am. 1837, IV, p. 55, tab. 1, Fig. 7 (*Peryphus*).

Habitat: Canada and the more northern portions of the country from the Atlantic to the Pacific.

B. inæquale Say.—Journ. Ac. Phil. 1823, ser. i, III, p. 151.

In color this species is usually greenish bronze. The surface is more or less alutaceo-granulate with elevated smooth spaces.

Habitat: The eastern portions of the country, extending westward to the Rocky Mountains and Texas.

B. littorale Oliv.—Ent. 1790, II, p. 6, pl. i, Fig. 7 a b.

A variable species. The surface is more or less alutaceo-granulate and the color varies from bronze to nearly black. The elevated smooth spaces of the elytra vary in number and extent.

Habitat: The more northern portions of the continent from the Atlantic to the Pacific. It occurs also in Europe and Siberia.

B. carinula Chaud.—Rev. et Mag. Zoöl. 1868, ser. 2, XX, p. 239.

Habitat: The more northern portions of the continent from the Atlantic to the Pacific.

B. punctatostriatum Say.—Trans. Am. Phil. Soc. 1823, II, p. 83.

The color is bronzed. The surface is more shining than in the last three species, and, as a consequence, the elevated smooth spaces of the elytra are feeble or nearly obsolete. The quadrate foveæ on the third interval are also less marked.

Habitat: From the Atlantic to the Pacific, extending as far south as Arkansas.

B. robusticollis Hayw.—Trans. Am. Ent. Soc. 1897, XXIV, p. 50.

Habitat: Michigan, Iowa and Kansas.

B. coxendix Say.—Journ. Ac. Phil. 1823, ser. i, III, p. 151.

Habitat: Illinois, Lake Superior region, Manitoba, Nebraska, Kansas, Colorado, New Mexico and Texas.

B. confusum Hayw.—Trans. Am. Ent. Soc. 1897, XXIV, p. 52.

This species has for some time been regarded as a variety of the preceding, but seems distinct by the characters above given. It is the *nitidulum* of Dejean.

Habitat: The Eastern United States, extending westward to Colorado.

B. americanum Dej.—Spec. 1831, V, p. 84.

This and the next four species differ from the others in which the dorsal punctures are placed on the third stria by the subangulate elytral humeri.

Habitat: The greater part of the region east of the Rocky Mountains.

B. dilatatum Lec.—Ann. Lyc. 1848, IV, p. 455 (*Ochthedromus*).

But two specimens are known to me. Of these one is Leconte's type, from Columbia, Pa. The other is from the Indian Territory and in Dr. Horn's collection.

B. honestum Say.—Trans. Am. Phil. Soc. 1823, II, p. 82.

This has been previously known as *antiquum* Dej. It approaches the next very closely.

Habitat: Canada and the United States from the Atlantic to the Rocky Mountains and Texas.

B. chalceum Dej.—Spec., 1831, V, p. 88.

Habitat: The same region as the preceding, but apparently less abundant.

B. blanchardi Hayw.—Trans. Am. Ent. Soc. 1897, XXIV, p. 56.

Habitat: Lowell, Mass.

B. nigrum Say.—Trans. Am. Phil. Soc. 1823, II, p. 85.

Habitat: Canada and the Eastern and Central States, extending westward to Iowa and Kansas.

B. longulum Lec.—Ann. Lyc. 1848, IV, p. 457 (*Ochthedromus*).

Habitat: Lake Superior region, the Rocky Mountains and California.

B. concolor Kirby.—Faun. Bor. Am. 1837, IV, p. 54 (*Peryphus*).

Habitat: Maine, the Lake Superior region and from thence westward to the Pacific Coast. It is essentially a northern species.

B. planatum Lec.—Ann. Lyc. 1848, IV, p. 456 (*Ochthedromus*).

Our largest species of *Bembidium*. In form it recalls certain species of *Platynus*.

Habitat: Lake Superior, the Rocky Mts., Nevada, Oregon, Washington and British Columbia.

B. simplex Lec.—List Col. N. Am. 1863, p. 14 (list name);

Hayw., Trans., Am. Ent. Soc. 1897, XXIV, p. 63.

Very closely allied to the next species.

Habitat: Labrador, Canada, the Hudson Bay Territory, the White Mts. of New Hampshire, Vermont, Massachusetts, the mountains of North Carolina, the Lake Superior region and Missouri.

B. planiusculum Mann.—Bull. Mosc. 1843, XVI, p. 215.

Habitat: Lake Superior, the Rocky Mts. and from thence westward to the Pacific Coast and northward to Alaska. But two specimens have been seen by me from the Lake Superior region.

B. incertum Mots.—Bull. Mos. 1845, XVIII, p. 350 (*Notaphus*).

The dorsal punctures are larger and more prominent than in most of the species of the genus.

Habitat: Lake Superior region, the Rocky Mountains, Alaska and the Northwest.

B. grandiceps Hayw.—Trans. Am. Ent. Soc. 1897, XXIV, p. 70.

The head is unusually large in this species, being scarcely narrower than the thorax.

Habitat: Massachusetts, New York, Pennsylvania, the District of Columbia and Texas. It seems to be local.

B. guexi Chaud.—Rev. et Mag. Zoöl. 1868, ser. 2, XX, p. 242.

Habitat: The northeastern States, extending southward to Virginia and westward to Lake Superior.

B. fugax Lec.—Ann. Lyc. 1848, IV, p. 467 (*Ochthedromus*).

Habitat: Canada, Vermont, Massachusetts, New York, New Jersey, Pennsylvania, Ohio, Michigan and Illinois.

B. transversale Dej.—Spec. 1831, V, p. 110.

A very variable species. As here constituted it includes several species that were based upon characters which become evanescent when a large series of specimens is studied.

Habitat: Gulf of the St. Lawrence, Canada, Michigan and the Lake Superior region and from thence westward to the Pacific Coast.

B. canadense *Hayw.*—Trans. Am. Ent. Soc. 1897, XXIV, p. 77.

This species differs from its allies in having all the striae of the elytra entire. It most nearly resembles the western *B. striola*.

Habitat: Ottawa, Canada.

B. bimaculatum *Kirby.*—Faun. Bor. Am. 1837, IV, p. 52 (*Peryphus*).

Habitat: The more northern portions of the continent from the Atlantic to the Pacific, extending southward in the mountainous regions to Colorado and Nevada.

B. postremum *Say.*—Trans. Am. Phil. Soc. 1834, IV, p. 437.

Habitat: Massachusetts (Lowell), New York, Pennsylvania (Allegheny) and Illinois. Apparently quite local.

B. ustulatum *Linn.*—Syst. Nat. 1758, I, p. 416 (*Carabus*).

Habitat: The region east of the Rocky Mountains, Europe and Siberia.

B. lucidum *Lec.*—Ann. Lyc. 1848, IV, p. 466 (*Ochthedromus*).

It resembles the preceding very closely and may possibly prove to be merely a variety of that species.

Habitat: Hudson Bay Territory, Lake Superior region, Minnesota, Manitoba, and from thence westward to the Pacific Coast.

B. fuscicrum *Mots.*—Etud. Ent. 1855, p. 79.

Habitat: Manitoba, Montana, Wyoming, Colorado, Utah and Oregon.

B. scopulinum *Kirby.*—Faun. Bor. Am. 1837, IV, p. 53 (*Peryphus*).

A very pretty and well-marked species.

Habitat: Labrador, Canada, Manitoba and the more northern States, extending westward to Colorado.

B. picipes *Kirby.*—Faun. Bor. Am. 1837, IV, p. 54 (*Peryphus*).

Specimens rarely are seen with a submarginal pale spot. This is the form described as *plagiatum* Zimm.

Habitat: Eastern States, Lake Superior region, Minnesota, Missouri and Texas.

B. texanum *Chaud.*—Rev. et Mag. Zoöl. 1868, ser. 2, XX, p. 240.

Habitat: Iowa, Missouri, Indian Territory and Texas.

B. grapii *Gyll.*—Ins. Suec. 1827, IV, p. 403.

Habitat: Northern Europe, Greenland, the more northern portions of this continent, and high altitudes in the White Mountains of New Hampshire, the Rocky Mountains and the Sierras.

B. cordatum *Lec.*—Ann. Lyc. 1848, IV, p. 457 (*Ochthedromus*).

Habitat: New York, Missouri, Nebraska, Colorado, Indian Territory and Texas.

B. graciliforme *Hayw.*—Trans. Am. Ent. Soc. 1897, XXIV, p. 97.

This species has been confused with the next in collections. It is, however, more slender, and differs essentially in the form of the thorax.

Habitat: Massachusetts, Pennsylvania, Michigan, Illinois and Iowa.

B. dentellum *Thunb.*—Mus. Nat. Ac. Ups. 1785, p. 50, not 10 (*Carabus*).

In this and the preceding the markings are ill-defined.

Habitat: The northern portions of this continent and Europe.

B. versutum *Lec.*—Proc. Am. Phil. Soc. 1878, XVII, p. 594.

Habitat: New Hampshire, Massachusetts, Michigan and Wisconsin.

B. dorsale *Say.*—Trans. Am. Phil. Soc. 1823, II, p. 84.

Habitat: The central region of the country. It seems to be most abundant in the States between the Mississippi River and the Rocky Mountains.

B. postfasciatum *Hamilton.*—Can. Ent. 1893, XXV, p. 303.

Confused in many collections with the preceding, which it resembles quite closely.

Habitat: Massachusetts, Pennsylvania, Ohio, Illinois, Iowa, Kansas and Texas.

B. viridicollis *Laferté.*—Rev. Zoöl. 1841, p. 48 (*Notaphus*).

Habitat: Massachusetts, the Central States, Manitoba and the Rocky Mountains.

B. fraternum *Lec.*—Proc. Ac. Phil. 1857, p. 6.

Habitat: Louisiana, Florida, Georgia, Virginia, Pennsylvania and Massachusetts.

B. æneicollis *Lec.*—Ann. Lyc. 1848, IV, p. 459 (*Ochthedromus*).

Habitat: Lake Superior region, Manitoba, Wyoming and Colorado.

B. variegatum Say.—Trans. Am. Phil. Soc. 1823, II, p. 89.

A very variable species. As defined by me, it includes *patruelle* Dej. and *consersum* Chaud., there being apparently no constant characters for their separation.

Habitat: The greater part of the United States and Canada from the Atlantic to the Pacific.

B. nigripes Kirby—Faun. Bor. Am. 1837, IV, p. 57 (*Notaphus*).

Capable of but feeble distinction from the preceding. The legs are dark piceous or black, and the form is rather less elongate, while the size averages somewhat smaller.

Habitat: Anticosti and the Gulf of the St. Lawrence, the Lake Superior region, Manitoba, Alberta, the Rocky Mountains, Oregon, Washington, British Columbia and Vancouver Island.

B. intermedium Kirby.—Faun. Bor. Am. 1837, IV, p. 58 (*Notaphus*).

Habitat: Illinois, Manitoba, Montana, Nebraska, Kansas, Indian Territory, Mississippi, Texas, Colorado, New Mexico, Arizona and southern California.

B. timidum Lec.—Ann. Lyc. 1848, IV, p. 460 (*Ochthedromus*).

Habitat: Lake Superior region, Manitoba, Colorado, Utah, Nevada and along the Pacific Coast from California to British Columbia.

B. versicolor Lec.—Ann. Lyc. 1848, IV, p. 460 (*Ochthedromus*).

Habitat: The greater part of the United States and Canada.

B. constrictum Lec.—Ann. Lyc. 1848, IV, p. 462 (*Ochthedromus*).

Habitat: The Atlantic Coast, extending westward to the Rocky Mountains and Texas.

B. contractum Say.—Trans. Am. Phil. Soc. 1823, II, p. 85.

Closely allied to the preceding, but differs, in addition to the characters above given, by its more slender and elongate form.

Habitat: The Atlantic States from Massachusetts to Florida and westward to Ohio and Tennessee.

B. morulum Lec.—New Species Coleopt. 1863, pt. i, p. 19.

Habitat: Hudson Bay Territory.

B. mutatum G. & H.—Cat. 1868, I, p. 416.

Habitat: Hudson Bay Territory, Mt. Washington, N. H., Lake Superior region and high altitudes in the Rocky mountains.

B. pedicellatum Lec.—Proc. Ac. Phil. 1857, p. 6.

Habitat: Pennsylvania, District of Columbia, Maryland and Missouri. Apparently very local

B. quadrimaculatum Linn.—Syst. Nat. 1758, I, p. 416 (*Carabus*).

Habitat: The entire region east of the Rocky Mountains, Europe and Siberia.

B. affine Say.—Trans. Am. Phil. Soc. 1823, II, p. 86.

Habitat: The Atlantic and Central States, extending southward to Florida, Texas and Arizona.

B. muscicola Hayw.—Trans. Am. Ent. Soc. 1897, XXIV, p. 122.

This species has for some time been erroneously regarded as the European *B. lampros* Hbst.

Habitat: Canada, New Hampshire, Massachusetts, Michigan and Illinois. Specimens have been seen labeled "Cal."

B. sulcatum Lec.—Ann. Lyc. 1848, IV, p. 463 (*Ochthedromus*).

Habitat: Canada, Hudson Bay Territory, Massachusetts, the Lake Superior region and Illinois.

B. anguliferum Lec.—Ann. Lyc. 1852, V, p. 185 (*Ochthedromus*).

Often confused with *cautum*, from which it is rather feebly distinct, by the characters above given.

Habitat: California, Vancouver Island, Nevada, Manitoba, Michigan, Pennsylvania, New Hampshire (Mt. Washington) and Canada.

B. cautum Lec.—Ann. Lyc. 1848, IV, p. 464 (*Ochthedromus*).

Habitat: Alaska, Washington, Utah, the Rocky Mountain region and Massachusetts. It has also been recorded from Mt. Washington, N. H., and from Michigan.

B. assimile Gyll.—Ins. Suec. 1810, II, p. 26.

Habitat: The greater part of North America and Europe.

B. semistriatum Hald.—Proc. Soc. Phil. 1843, I, p. 303 (*Lopha*).

Recalls *levigatum* by the arrangement of the dorsal punctures.

Habitat: New Hampshire, Massachusetts, Pennsylvania and Kentucky.

B. puritanum Hayw.—Trans. Am. Ent. Ac. 1897, XXIV, p. 129.

Resembles most closely the Californian *B. laticeps*.

Habitat: Massachusetts.

B. oblongulum *Mann.* — Bull. Mosc. 1852, XXV, p. 298 (*Trechus*).

Referable to *Amerizus* Chaud., by the peculiar structure of the outer lobe of the maxillæ, were that genus allowed to stand.

Habitat: Canada, Vermont, the White Mountains of New Hampshire, Massachusetts (Lowell), Ohio, Michigan, Alaska, California and Mexico.

(*To be continued.*)

BIOLOGICAL NOTES ON SOME COLEOPTERA FROM NEW MEXICO.

By T. D. A. COCKERELL, Mesilla, N. M.

In the course of some studies of plant fauna, the following memoranda have been made. The contemplated work treating of the several plant faunæ in detail is not likely to be finished for some years, so it may be well to offer some of the results in advance.

CHRYSOMELIDÆ.

Calligrapha serpentina *Rog.*

In Mesilla this breeds abundantly on *Sphæralcea angustifolia*. On July 20 I found one ovipositing on the under side of a leaf next to the midrib. The eggs are placed irregularly in a heap, loosely united by a viscid secretion, the majority endwise on the leaf. The egg is 2 mm. long, cylindrical, rounded at each end, pink (the color of a red raspberry, granular from the presence of innumerable closely-placed low tubercles, the extreme tips smooth and shining. Although the egg masses are very conspicuous at a short distance, they could be overlooked easily on the plant, being about the size and color of the flowers. The larvæ are gregarious on the under side of the leaf and are brown-black to dark brown, with long black hairs on which appear pale objects which, on close inspection, are seen to be the stellate hairs of the plant detached. I do not describe the larvæ further, as I sent some to Professor Wickham, who will probably describe and figure them.

Chrysomela tortuosa *Rog.*, (det. Wickh.)—On July 10 I took one at Deming on *Ephedra*.

Doryphora decemlineata *Say.*—Abundant on *Solanum elæagnifolium* in Mesilla, breeding. This species belongs to the Upper Sonoran,